RSX–11M
Mini–Reference

Order No. AV-5570C-TC

RSX-11M Version 3.2

The following are trademarks of Digital Equipment Corporation:

DIGITAL	DECsystem-10	MASSBUS
DEC	DECtape	OMNIBUS
PDP	DIBOL	OS/8
DECUS	EDUSYSTEM	PHA
UNIBUS	FLIP CHIP	RSTS
COMPUTER LABS	FOCAL	RSX
COMTEX	INDAC	TYPESET-8
DDT	LAB-8	TYPESET-11
DECCOMM	DECSYSTEM-20	TMS-11
ASSIST-11	RTS-8	ITPS-10
VAX	VMS	SBI
DECnet	IAS	PDT
DATATRIEVE	TRAX	

INTRODUCTION

This handbook is intended as a convenient, easy-to-use reference for RSX-11M system users. Included are summaries of the commands for the following systems and facilities:

In addition, the following documentation conventions are used in this handbook:

Lowercase letters designate a variable whose value is determined when the command is entered.

Uppercase letters designate a command line element that must be entered as shown.

Square brackets ([]) enclose optional parameters, except for UIC specifications which always require brackets.

Numeric values in commands can be octal or decimal, unless the command description specifies otherwise.

Braces ({ }) indicate that the user can choose any one of the items that are enclosed.

(XXX)   A one- to three-character symbol indicates that you press a
                  key on the terminal, for example, (RET) or (ESC) .

(CTRL/X)   The symbol (CTRL/X) indicates that you press the key labeled
                  CTRL while you press another key, for example (CTRL/C) ,
                  (CTRL/Y) , (CTRL/O) .

MONITOR CONSOLE ROUTINE (MCR) COMMANDS

In this section, (P) indicates that a command format or keyword is privileged.

Nonprivileged MCR Commands

The commands described below can be issued by any user.

ABO[RT] taskname [/keyword]

Keywords: PMD

Terminates execution of the specified task. All users can generate a Postmortem Dump with the PMD keyword.

ACT[IVE] [/keyword]

Keywords: ALL

Displays on the terminal all tasks issued from that terminal or all tasks active in the system.

ALL[OCATE] ddn: [keyword]

Keywords: = LLnn:
        TERM = TTnn:

Establishes the specified device as the user's private device on multiuser protection systems. Privileged users can allocate a device to any terminal, using the TERM keyword, but nonprivileged users can only allocate devices to their own terminals. The LLnn: keyword allows the user to equate a physical device with a logical device. Specifying the command with only a 2-character abbreviation allocates the first free device of the type specified.

Assign   ASN ppn: = LLnn: [/keyword]

Keywords: GBL
        LOGIN
        TERM = TTnn:

Defines, displays, or deletes logical device assignments as follows:

Local assign operations

ASN ppn: = LLnn:
ASN ppn: = LLnn:/TERM = TTnn: **(P)**

Login assign operations

ASN ppn: = LLnn:/LOGIN   **(P)**
ASN ppn: = LLnn:/LOGIN/TERM = TTnn: **(P)**

Global assign operations

ASN ppn: = LLnn:/GBL   **(P)**

Local display operations

ASN

Login display operations

ASN /TERM = TTnn: **(P)**

Global display operations

ASN /GBL   **(P)**

Local delete operations

ASN =
ASN = LLnn:

Login delete operations

ASN = /LOGIN   **(P)**
ASN = /LOGIN/TERM = TTnn: **(P)**
ASN = /TERM = TTnn: **(P)**
ASN = /LLnn:/TERM = TTnn: **(P)**

Global delete operations

ASN = /GBL
ASN = LLnn:/GBL   **(P)**

Active Task List   ATL [taskname]

Displays on the entering terminal the name and status of all active tasks
in the system or the status of the particular task specified.

BRO[ADCAST] TTn:message
BRO[ADCAST] @filespec
BRO[ADCAST] ALL:message(P)
BRO[ADCAST] LOG:message(P)

Displays the specified message at one terminal for a nonprivileged com-
mand or at a number of terminals for a privileged command.

BYE

Logs the user off a multiuser protection system.

CAN[CEL] taskname

Cancels time-based initiation of a task. Privileged users can cancel any task but nonprivileged users can only cancel tasks that they initiated.

DEA[ALLOCATE] [ddn:]

Releases a private (allocated) device when ddn: is the device name and unit number. Privileged users can deallocate any device but nonprivileged users can only deallocate devices that they have allocated. If no device is specified, the command deallocates all of the user's allocated devices.

DEV[ICES] [/keyword]

Keywords: dd:
           /LOG

Displays symbolic names of all devices or of all devices of a particular type known to the system. The LOG keyword displays logged-in terminals.

Dismount   **DMO ddn:[label][/keyword(s)]**

Keywords: DEV(**P**)
           USER
           TERM = TTnn:(**P**)

Tells the file system to mark the volume for dismount and to release the control blocks. Privileged users can dismount any volume, but nonprivileged users can only dismount devices that they have mounted.

Group Global Event Flags   **FLA[GS][ggg[/keyword]]**

Keywords: CRE
           ELIM

For privileged users, creates or eliminates global event flags for any group. For nonprivileged users, creates or eliminates group global flags only for their own group.

HEL[LO] UIC/PASSWORD

Logs a user on a terminal to access a multiuser system.

5

HELP [qualifier][qualifier 2][...qualifier 9]
HELP %[qualifier][qualifier 2][...qualifier 9]

Displays the contents of [1,2]HELP.TXT or the contents of a user help file on the issuing terminal.

INI[TVOLUME] ddn:volumelabel [/keyword(s)]

Keywords: BAD = [option]
           CHA = [characteristics]
           DENS = density selection
           EXT = block-count
           FPRO = [system,owner,group,world]
           INDX = index-file-position
           INF = initial-index-file-size
           LRU = directory-preaccess-count
           MXF = file-count
           PRO = [system,owner,group,world]
           UIC = [group,member]
           WIN = retrieval-pointer-count
           VI = keyword list

Produces a Files-11 volume on disk, magnetic tape, or DECtape. On multiuser protection systems, users can only initialize volumes on devices that they allocated.

LOGICAL UNIT NUMBERS   LUN[S] [taskname]

Displays at the entering terminal the static LUN assignments for a specified task.

MOUNT

Files-11 disk or DECtape format

MOU[NT] ddn:[volumelabel][/keyword(s)]

Keywords: ACP = taskname
EXT = block-count
FOR = acpname
FPRO = [system,owner,group,world]
LRU = FCB-count
OVR (override)
PARM = user parameters
UIC = [uic]
UNL
VI (volume information)
WIN = retrieval-pointer-count

Creates the Volume Control Block (VCB) and declares the volume logically online for access by a file system.

Files-11 (ANSI) magnetic tape format

MOU[NT] device(s):volume(s):[/keyword(s)]

Keywords: ACP = taskname
BYPASS
DENS = tape-density
FPRO = [system,owner,group,world]
NOLAB
OVR (override)
OVRFSID
OVREXP
UIC = [uic]/VI
VI (volume information)

Allocates the Volume Set Control Block (VSCB) and mounted and unmounted volume lists. Devices are specified as device(s), and volumes are specified as volume(s).

PARTITION DEFINITIONS   PAR[TITIONS]

Displays on the entering terminal a description of each memory partition in the system.

RES[UME] taskname

Allows nonprivileged users to continue execution of a suspended task that was initiated from the entering terminal. Privileged users can direct the Resume command to any suspended task.

RUN taskname [/RSI = magu][/UIC = [uic]]
RUN taskname dtime [/RSI = magu][/UIC = [uic]]
RUN taskname sync [dtime][/RSI = magu][/UIC = [uic]]
RUN taskname atime [/RSI = magu][/UIC[uic]]
RUN [ddn:][$] filespec [/keyword(s)]

Keywords: CKP = option
               INC = size
               PAR = pname
               PRI = number
               SLV = option
               TASK = taskname
               UIC = [g,m]

Initiates execution of a task, either immediately or at one of several time-dependent intervals.

SET /keywords = values

Keywords:	
BUF = dev:[size]	PRIV[= TTnn:]
CRT[= TTnn:]	PUB[= dev:]
EBC[= TTnn:]	REMOTE[= TTnn:]
ECHO[= TTnn:]	RPA[= TTnn:]
ESCSEQ[= TTnn:]	SLAVE[= TTnn:]
FDX[= TTnn:]	SPEED = TTnn:[recv:xmit]
FORMFEED[= TTnn:]	SYSUIC[= uic] **(P)**
HFILL = TTnn:[value]	TERM = TTnn:[value]
HHT[= TTnn:]	TYPEAHEAD[= TTnn:]
HOLD[= TTnn:]	UIC[= uic:[TTnn:]]
LA30S[= TTnn:]	UIC[= TTnn:]
LINES = TTnn:[value]	VFILL[= TTnn:]
LOGON **(P)**	VT05B
LOWER = [TTnn:]	WCHK[= dev:]
MAIN **(P)**	WRAP[= TTnn:]
MAXEXT **(P)**	
MAXPKT **(P)**	
POOL	

Establishes device characteristics for the device specified. Privileged users can alter device characteristics for all of the devices on the system, but nonprivileged users can only alter and observe characteristics for devices allocated to them.

Stop **STP /keyword**

Keywords: taskname
TERM = TTnn:

Declares that the task specified is no longer eligible to execute or compete for memory resources.

Task List **TAL [taskname]**

Displays the names and status of all tasks installed on the system or of tasks of a particular task name.

Tasklist **TAS**

Describes each task installed on the system.

Time **TIM [dd-mon-yr][hh:mm:ss]**
[mon/dd/yr]

For privileged users, sets and displays the date and time for the system. For nonprivileged users, only displays them.

User File Directory **UFD ddn:[volabel][g,m][/keyword(s)]**

Keywords: ALLOC = num-entries
PRO = [s,o,g,w]

Creates a User File Directory (UFD) on a Files-11 volume and enters its name onto the Master File Directory (MFD). Privileged users can create UFDs on any volume, but nonprivileged users can create UFDs only on a volume mounted on a device that they have allocated.

UNS[TOP] [/keyword]

Keywords: taskname
TERM = TTnn:

Continues execution of a previously stopped task.

Privileged MCR Commands

Allocate Checkpoint Space **ACS ddn:/BLKS = n**

Allocates or discontinues a checkpoint file on disk for systems that support the dynamic allocation of checkpoint space.

ALT[ER] taskname[/keyword]

Keywords: PRI = running and static priority
RPRI = running priority only

Changes the static or running priority of an installed task.

BOO[T] filespec

Bootstraps a system that exists as a task image file on a Files-11 volume.

Breakpoint to XTD   BRK

Passes control to the Executive Debugging Tool (XDT).

CLQ[UEUE]

Displays on the entering terminal information about tasks currently in the clock queue, or about tasks activated by either a Run command or a RUN$ directive that specified a time-based option.

Fix-in-Memory   FIX taskname

Loads and locks a task into its partition.

INS[TALL] [$]filespec[/keyword(s)]

Keywords: CKP = option
EST = option
INC = size
PAR = pname
PMD = option
PRI = number
SLV = option
TASK = taskname
UIC = [g,m]

Makes a specified task known to the system.

LOA[D] dd:[/keyword(s)]

Keywords: PAR = parname
SIZE = parsize
HIGH

Reads a nonresident device driver into memory and constructs the linkages required to allow access to the device.

Open Register   OPE[N] mem-addr[+ / − n][/keyword](mem-addr)
                     (contents-addr)/[value] < line-terminator >

Keywords: TASK = taskname
            PAR = partitionname
            KNL
            DRV = dd:

Allows examination and optional modification of a word of memory.

REA[SSIGN] taskname lun ddn:

Reassigns a task's static logical unit numbers from one physical device
to another.

RED[IRECT] nddn: = oddn:

Redirects all I/O requests from one physical device unit to another (from
o to n).

REM[OVE] taskname

Deletes an entry (task name) from the System Task Directory (STD) and
thereby removes the task from the system.

SAV[E] [/keyword(s)]

Keywords: WB
            MOU = "string"
            SFILE = "string"

Copies the current system image into the system image file from which
the current system was booted.

System Service Message   SSM messagetext

Inserts text into the error log reports.

UNF[IX] taskname [/keyword]

Keywords: RG
            RI

Frees a fixed task from memory.

UNL[OAD] dd:

Removes a loadable device driver from memory.

11

LINE TEXT EDITOR (EDI) COMMANDS

In this section, the following conventions are used:

The asterisk (*) can be used in place of any number in an EDI command. It is read as 32,767.

An ellipsis (. . .) can be used in many search strings to identify characters between the first and last characters of the string.

EDI allows the use of abbreviations in commands. Square brackets enclose optional command text.

ADD string   A string

Adds the character string indicated to the end of the current line.

ADD AND PRINT   AP string

Adds the character string indicated to the end of the current line and prints the entire line on the terminal.

BEGIN   B[EGIN]

Sets the current line to the line preceding the top line in the file or block buffer. This command creates a copy of the file when it is invoked in Line Mode.

BLOCK ON/OFF   BL[OCK] [ON] or BL[OCK] [OFF]

Changes to and from the EDI Block Mode of accessing text.

BOTTOM   BO[TTOM]

Moves the line pointer to the bottom of the current block (in Block Mode) or to the bottom of the file (in Line Mode).

CHANGE   [n]C[HANGE] /string1/string2[/]

Replaces string 1 with string 2 in the current line n times.

CLOSE   CL[OSE] [filespec]

Transfers the remaining lines in the block buffer and input file to the output file and closes all files.

13

CLOSE AND DELETE   CDL [filespec]

Transfers the remaining lines in the block buffer and the input files to the output file, closes the output file, and deletes the input file.

CLOSE SECONDARY   CLOSES

Closes the secondary input file.

CONCATENATION CHARACTER   CC [letter]

Changes the concatenation character to the character specified. (The default is &.)

CTRL/Z   (CTRL/Z)

Closes files and terminates the editing session.

DELETE   D[ELETE] [n] or
              D[ELETE] [-n]

Deletes the current line(s) as specified above and n–1 lines if n is a positive number. Deletes n lines preceding the current line if n is a negative number. Negative numbers can only be used in Block Mode.

DELETE AND PRINT   DP [n] or DP [-n]

Deletes the current line and prints the new current line.

END   E[ND]

Sets the last line in a file or block buffer as the block buffer current line.

ERASE   ERASE [n]

Erases the current line in Line Mode.

ESCAPE   (ESC)
or
ALTMODE   (ALT)

Prints the previous line and makes it the new current line.

EXIT   EXIT [filespec]

Transfers the remaining lines in the block buffer and input file to the output file. Closes files, renames the output file if specified, and terminates the editing session.

EXIT AND DELETE   **ED [filespec]**

Transfers the remaining lines in the block buffer and input file to the output file, closes files, renames the output file, and deletes the input file.

FILE   **FIL[E] filespec**

Transfers lines from the input file to both the output file and the specified file until a form feed or end-of-file is encountered. This command is only legal in Line Mode.

FIND   **[n]F[IND] string**

Searches the current block or input file, beginning at the line following the current line, for the nth occurrence of the string specified. (If n is not specified, EDI searches for the next occurrence of the string.) Sets the line pointer to the line it finds. A string must begin in the first column of the line to be a match.

FORM FEED   **FF**

Inserts a form feed into the block buffer.

INSERT   **IN[SERT] [string]**

Enters the specified string immediately following the current line. If no string is specified, EDI enters Input Mode.

KILL   **KILL**

Closes the input and output files and deletes the output file.

LINE CHANGE   **[n]LC/string1/string2[/]**

Changes all occurrences of string 1 in the current line (and n-1 lines) to string 2.

LIST ON TERMINAL   **LI[ST]**

Prints on the terminal all of the lines remaining in the block buffer or input file.

LOCATE   **[n]L[OCATE] string**

Locates the nth occurrence of the specified string. In Block Mode, the search stops at the end of the current block.

MACRO   **MACRO [x] definition**

Defines the macro number x for the EDI commands in the definition.

MACRO CALL   MC[CALL];[n]

Retrieves the macro definition stored in the file MCALL;n.

MACRO EXECUTE   [n]Mx [a]

Executes macro x n times, while passing numeric argument a. The value x can be 1, 2, or 3.

MACRO IMMEDIATE   [n] <definition>

Defines and executes a macro n times. Stores it as macro number 1.

NEXT   N[EXT] [n] or
**   N[EXT] [-n]**

Establishes a new current line n lines away from the current line.

NEXT AND PRINT   NP[n] or
**   NP[-n]**

Establishes and prints a new current line.

OPEN SECONDARY   OP[ENS] filespec

Opens the specified secondary file.

OUTPUT ON/OFF   OU[TPUT] ON or
**   OU[TPUT] OFF**

Enables or disables a file transfer to an output file in Line Mode.

OVERLAY   O[VERLAY] [n]

Deletes n lines, enters Input Mode, and inserts new line(s), as typed, in place of the deleted lines.

PAGE   PAG[E] n or -n

Enters Block Mode. Reads page n into current block buffer. If n is less than the current page, EDI goes to the top of the file first. Pages are set by form feed characters.

PAGE FIND   [n]PF[IND] string

Searches successive blocks for the nth occurrence of the string. A string must begin in the first column of the line to be a match.

PAGE LOCATE   [n]PL[OCATE] string

Searches successive blocks for the nth occurrence of the string.

PASTE   **PA[STE] /string1/string2[/]**

Searches all remaining lines in the file or block buffer that contain string 1 and replaces them with string 2.

PRINT   **P[RINT] [n]**

Prints the current line and the next n-1 lines on the user's terminal. The last line printed becomes the new current line.

READ   **REA[D] n**

Reads the next n blocks of text into the block buffer. If the buffer already contains text, the new text is appended to it.

RENEW   **REN[EW] [n]**

Writes the current block to an output file and reads a new block from an input file (Block Mode only).

RETURN   (RET)

Prints the next line on the terminal and makes it the new current line. This command also exits from Input Mode if it is typed as the first character of a line.

RETYPE   **R[ETYPE] string**

Replaces the current line with the specified string or deletes the current line if no string is specified.

SAVE   **SA[VE] [n] [filespec]**

Saves the current line and the next n-1 lines in the specified file.

SEARCH AND CHANGE   **SC/string1/string2[/]**

Locates string 1 and replaces it with string 2.

SELECT PRIMARY   **SP**

Reestablishes the primary file as an input file.

SELECT SECONDARY   **SS**

Selects an open secondary file as an input file.

SIZE   **SIZE n**

Specifies the maximum number of lines that can be read into a block buffer.

TAB   TA[B] ON or
              TA[B] OFF

Turns automatic tabbing on or off.

TOP   T[OP]

Moves the line pointer to the line preceding the top line of the current block in Block Mode or to the top of the file in Line Mode. The TOP command creates a new version of the file each time it is executed in Line Mode.

TOP OF FILE   TOF

Returns to the top of the input file and saves all of the previously edited pages. This command creates a new version of the file each time it is executed in Line Mode.

TYPE   TY[PE] [n]

Prints the next n lines on the terminal. This command is identical to the PRINT command in Line Mode. However, in Block Mode, the line pointer remains at the current line unless EDI reached the end of a block.

UNSAVE   UNS[AVE] [filespec]

Inserts all lines from the specified file following the current line. If no file name is used, EDI looks for a file called SAVE.TMP.

UPPER CASE   UC ON or
              UC OFF

Enables or disables conversion of lowercase letters to uppercase letters when they are entered at a terminal.

VERIFY   V[ERIFY] ON or
              V[ERIFY] OFF

Selects whether the operation of the LOCATE and CHANGE commands will be verified (printed on the terminal) after the line is located or changed.

WRITE   W[RITE]

Writes the contents of the block buffer to an output file and erases the block buffer.

DEC STANDARD EDITOR (EDT) COMMANDS

C[HANGE] [range] [/NL]

Invokes EDT Character Editing Mode, which can be used only on a video display terminal. (The terminal must also be set to CRT to permit the use of Character Mode.)

Character Mode allows the following subcommands which, except for Exit, work the same as they do in Command Mode:

D[ELETE] [range] [/keyword]

Deletes the specified text from a buffer.

E[XIT] [/keyword]

Terminates Character Mode and returns to Command Mode.

I[NSERT] [range] [/keyword]

Inserts text into the buffer.

QUIT

Terminates EDT operation without creating or modifying any files.

R[EPLACE] [range] [/keyword]

Removes specified text and goes into Insert Mode so replacement text can be entered.

S[UBSTITUTE/string1/string2

Replaces the first string of characters with the second.

CTRL/Z   (CTRL/Z)

Terminates an insert. Returns to Character or Command Mode.

CO[PY] range-1 %TO range-2 [/keyword]

Keywords: QUERY
              SEQuence:initnum:incr
              UNsequenced

Transfers lines from one location to another, at the same time retaining the lines in their original location.

19

D[ELETE] [range] [keyword]

    Keywords: QUERY

    Deletes the specified lines from the buffer being edited.

EX[IT] [/keyword]

    Keywords: RE[NAME] filename
                    SEQ[UENCE]:initnum:incr
                    UN[SEQUENCED]

    Terminates EDT operation and saves the contents of the Main Text Buffer.

FIND range

    Moves the line pointer to the beginning of the specified line.

INC[LUDE] [range] /FI:filename [range] [/keyword]

    Keywords: [SEQ[UENCE]:initnum:incr

    Locates a file and copies it into the specified text buffer at the specified range.

I[NSERT] [range] [/keyword]

    Keywords: SEQ[UENCE]initnum:incr
                    UN[SEQUENCED]

    Places the text that is typed at the terminal into a text buffer.

M[OVE] range-1 %TO range-2 [/keyword]

    Keywords: Q[UERY]
                    SEQ[UENCE]:initnum:incr

    Transfers lines from one location to another and deletes them from the original location.

PR[INT] [range] /FI:filename

    Creates a file from the contents of a text buffer. The new file includes as part of the text the EDT line numbers in the original buffer.

QUIT

    Terminates EDT and does not save the contents of any text buffer.

R[EPLACE] [range] [/keyword]

> Keywords: SEQ[UENCE]:initnum:incr
> UN[SEQUENCED]

> Deletes lines specified and enters Insert Mode so that the lines can be replaced.

RES[EQUENCE] [range] [/keyword]

> Keywords: SEQ[UENCE]:initnum:incr
> UN[SEQUENCED]

> Assigns new line numbers to the lines in the current text buffer.

REST[ORE]/FI:filename

> Locates the file created by an EDT Save command and uses the file to re-create the status of all files and text buffers as they were preserved with the EDT Save command.

SA[VE]/FI:filename

> Preserves the contents of text buffers and the status of all files used during an EDT editing session in a file which the user names (using the form filename.SAV).

SET

CA[SE] [/keyword]
UPPER
LOWER
NONE

EXACT [/keyword]
CASE
NONE

TE[RMINAL] [/keyword]
HCPY
VT05B
VT50
VT52
VT55
VT61
LA30
LA36

> Establishes criteria used by other EDT commands to flag upper- or lowercase characters and to set parameters for the terminal being used.

21

SHOW [/keyword]

Keywords: BU[FFERS]
CA[SE]
EXACT
TE[RMINAL]
VE[RSION]

Displays buffer and software version information and options established by the SET command.

S[UBSTITUTE]/string1/string2/[range][/keyword]

Keywords: BR[IEF]
O[UERY]
-T[YPE]

Changes characters within lines of the text buffer.

S[UBSTITUTE] Next

Repeats the substitution carried out in the SUBSTITUTE command it follows.

[TYPE] range

Displays lines of text at the terminal.

WR[ITE] [range][/keyword]

Keywords: FI:filename
SEQ[UENCE]:initnum:incr
UN[SEQUENCED]

Creates a file from the contents of a text buffer.

XEQ range

Executes a sequence of EDT commands that were previously entered and stored in a buffer.

PERIPHERAL INTERCHANGE PROGRAM (PIP) COMMANDS

The default PIP operation (with no switches specified) is to copy files, using the following format:

outfile = infile(s)/subswitches

Creates a copy of a file on the same or another volume.

PIP allows the following parameters for this command:

outfile   If file name, file type, or file version is null or specified by wildcards, PIP uses input parameters unless it is overruled by the New Version (/NV) or Successor (/SU) switches.

                  If the file name, file type, or file version is defined, no other field can be a wildcard and only one input file can be specified.

infile   If file name, file type, or file version is null, the default is *.*;*.

subswitches:

/BL:n   Specifies the number of contiguous blocks for the output file, where n is octal or decimal.

           If n is decimal, it is followed by a period (n.).

/CO, /-CO, or /NOCO   Specifies a contiguous or noncontiguous output file.

/FO   File ownership (output file UFD).

/NV   Forces the output version number of the copied file to be 1 more than the current highest version.

/SU   Copies the output file, superseding the existing output file.

APPEND   **outfile[/FO] = infile(s)/AP[/FO]**

Opens an existing file and appends the input files, infile(s), to the end of it.

PIP allows the following parameters for this command:

outfile   Explicit file name and file type.

infile(s)   Explicit file parameters; wildcard by default.

/FO   File ownership is the output file UFD; without /FO, ownership is the UIC of the user running PIP.

BLOCKSIZE outfile[/BS:n] = infile[/BS:n]

Defines the block size for 7- and 9-track magnetic tape.

CREATION DATE outfile/CD = infile

Gives the output file the creation date of the input file rather than the date of the file transfer. (This switch cannot be used with the Merge switch.)

DEFAULT [ddn:][g,m]/DF

Changes the PIP default device and/or UFD.

DELETE infile(s)/DE[/LD]

Deletes files. /LD is a subswitch that causes PIP to list the files it deletes.

END-OF-FILE infile/EOF[:block:byte]

Specifies the end-of-file pointers for a file. If values for block and byte are not entered, PIP places EOF at the last byte of the last block in the file.

ENTER outfile = infile(s)/EN[/NV]

Enters a synonym for a file in a directory with an option to force the version number of the output file to 1 greater than the latest version for the file.

outfile   The file name, file type, or file version can be explicit, a wildcard, or null. A field that is a wildcard or null assumes a corresponding input field.

infile   Default for the file name, file type, and file version is *.*;*.

/NV   See COPY.

FILE ID /FI:filenumber:sequencenumber

Accesses a file by its file identification number (File ID).

FREE [ddn:] /FR

Prints on the terminal the amount of space available on a volume and the largest block of contiguous space.

IDENTIFICATION /ID

Causes the version number of PIP currently in use to be displayed on the terminal.

LIST listfile = infile(s)/LI[/subswitch]

Lists the contents of one or more User File Directories, with an option to specify formats for output directories.

outfile   Listing file specifier; defaults to TI:.

infile   Default is *.*;*.

The subswitches determine what type of report is displayed.

/LI/BR or /BR   Brief report.

/LI   Limited report.

/LI/FU:n or   Full report (n specifies the decimal characters
/FU:n   per line; the default is device buffer size).

/LI/TB or /TB   Total blocks report.

MERGE (CONCATENATE) outfile = infiles/ME[/subswitches]

Creates one file by concatenating two or more files. The fields and subswitches are the same as for the PIP COPY operation.

NO MESSAGE infile(s)/NM[/SW]

Causes certain PIP error messages not to be printed, for example, the message NO SUCH FILE(S). The switches that can be used with the No Message switch are:

/LI   Lists directory.

/DE   Deletes file(s).

/PU   Purges files.

Any subswitches of these switches can also be used.

PROTECTION symbolic: infile/PR:symbolic[/FO]
numeric: infile/PR:octal value[/FO]

Alters the file protection for the file specified. The file name and file type must be explicit.

Symbolic protection codes assign privilege merely by their presence, using:

System   =   /SY:RWED
Owner   =   /OW:RWED
Group   =   /GR:RWED
World   =   /WO:RWED

Numeric protection denies privilege by setting bits in a protection status word. Add octal values from the following list to deny privilege.

25

User Class	Privilege	Octal Code	Bit
System	R	1	0
	W	2	1
	E	4	2
	D	10	3
Owner	R	20	4
	W	40	5
	E	100	6
	D	200	7
Group	R	400	8
	W	1000	9
	E	2000	10
	D	4000	11
World	R	10000	12
	W	20000	13
	E	40000	14
	D	100000	15

PURGE infile(s) /PU:[n][/LD]

Deletes a specified range of versions of a file (but does not delete the latest version). Specification of a file version number is not necessary. Wildcards are valid for file name and file type.

When :n is specified, PIP deletes all but n latest consecutively numbered versions. Without :n, PIP deletes all but the latest version.

REMOVE infile(s) /RM

Removes an entry from a directory file (the opposite of ENTER).

RENAME outfile = infile(s)/RE[/NV]

Changes the name of the file specified. Used with the New Version(/NV) switch, RENAME creates an output file with a version number 1 higher than the last version of the file.

outfile   A wildcard (*) or null field assumes the value of the corresponding field in the input file.

infile   Null file name, file type, and file version default to *.*;*.

/NV   See COPY.

REWIND outfile[/RW] = infile[/RW]

outfile	Causes the tape on the specified unit to be erased.
infile	Causes the tape on the specified unit to be rewound before the input file is opened.

SELECTIVE DELETE infile(s)/SD

Prompts for user response before deleting files.

SHARED READING infile(s)/SR

Allows shared reading of a file that has already been opened for writing.

SPAN BLOCKS outdskvolume:outfile/SB = inmagvolume:infile

Allows output file records to cross block boundaries when ANSI tapes are being copied to Files-11 volumes.

SPOOL infile(s)/SP[:n]

Specifies a list of files to be printed (n is the number of copies). This switch applies only if the user has the Serial Despooler or the Queue Manager. However, its use with the Queue Manager is not recommended.

SUPERSEDE outfile = infile(s)/SU

Copies an input file, superseding an existing output file of the same name and version number.

USER FILE DIRECTORY ENTRY outfile(s)/UF[/FO] = infile(s)

Creates a User File Directory on a volume.

outfile	Specifies the UIC as [*,*] to transfer multiple infile UICs.
/FO	See APPEND.

UNLOCK infile(s)/UN

Unlocks a file that was locked as a result of being closed improperly. Lets the user know that the data contained in the file may have been corrupted.

UPDATE FILE outfile = infile(s)/UP[/FO]

Opens an existing file and writes it, from the beginning, into the output file.

outfile	Must be explicitly identified.
infile	Null parameters default to *.*;*. Input file(s) replace the current contents of output files.

27

ON-LINE DEBUGGING TOOL (ODT) COMMANDS

OPEN/DISPLAY/MODIFY TASK LOCATIONS

address mode-symbol contents new-value terminator

address (a)

Specifies the effective address of the location (word or byte) to be opened. The address can be expressed absolutely or in relative form (see Relocatable Address). An odd address forces byte mode.

mode-symbol

Specifies the mode in which the location is to be opened or displayed. If the address is not specified, the last opened location is opened and displayed.

Symbol	Open/Display Location As:
/	6-digit octal word
\\	3-digit octal byte
"	2 ASCII characters (word)
'	1 ASCII character (byte)
%	3 Radix-50 characters (word)

contents

Specifies the current contents of the opened location.

new-value [k]

Specifies the optional value to replace the current contents upon termination of the command line.

terminator

Closes the currently open location, replacing the current contents (if so directed). The terminators are:

Return   (RET)

Terminates the current sequence, displays the ODT prompt (_), and waits for the next command.

Line feed   (LF)

Opens the next sequential location and prints its contents.

29

Circumflex (^) or up-arrow (↑)

Opens the preceding location in the current mode. If typed as an ODT prompt, rather than as a terminator, opens the location that precedes the last-opened location in the same mode.

Underline (__) or back-arrow (←)

Opens the PC-relative location. The effective address equals the contents (previous or replaced) of the current location added to its address plus 2. Mode is the same, except that odd effective addresses force byte mode.

At sign (@)

Opens the location addressed absolutely by the contents (previous or replaced) of the current location. Mode is the same, except that odd effective addresses force byte mode.

Right angle bracket (>)

Opens the PC-relative branch-offset location. The effective-address calculation involves the low-order byte of the contents (previous or replaced) of the just-closed location. Byte, as a signed value, is multiplied by 2 and added to its effective address plus 2. Mode remains the same as when the location was opened.

Left angle bracket (<)

Reopens the location most recently opened by a /, <LF>, or ^ . If the currently open location was not opened by a __, @, or >, then < closes and reopens the current location.

COMMAND INPUT ERRORS

Individual characters in a command line cannot be corrected. In general, typing an illegal character or command (such as 8 or 9) causes ODT to ignore the input, print the question mark error indicator (?), and wait for a valid command.

RELOCATABLE ADDRESS

An effective address can be entered as an explicit value relative to (plus) the contents of a relocation register; typically the register contains the relocatable base address for the applicable program section or object module. ODT displays task addresses in relative form if a relocation register contains an address-offset value equal to or less than the address to be displayed; if the Format Register (\$F) contains 0, ODT also displays the register's initialized state. Otherwise, ODT displays addresses in absolute form. The relocation registers are identified as 0R through 7R; a null value is taken as 0 when an offset is established. The registers initially contain -1, the nonactive state.

Establishing Relocatable Address Offsets

value;nR   Value replaces current contents of relocation register n.

n,value;nR Value is added to (subtracted from) current contents of relocation register n.

$nR/   Displays current contents of relocation register n. New value is typed before terminator replaces current contents.

Inhibiting Relocatable Addressing

R   Sets all active relocation registers to -1, the nonactive state.

nR   Sets relocation register n to -1, the nonactive state.

Entering or Displaying Relative Address

r,address   Effective address is address relative to (plus) the current contents of relocation register r.

BREAKPOINTS

A breakpoint must be set in the first word of an instruction. Breakpoints are identified as 0B through 7B. (8B is reserved for use with single step execution.) A breakpoint address can be entered in absolute or in relative form (see Relocatable Address).

Inserting Breakpoints

r,address;nB Inserts breakpoint n at specified address.

r,address;B   Inserts next unset breakpoint at specified address.

Removing Breakpoints

B   Removes all inserted breakpoints.

nB   Removes only breakpoint n.

Moving Breakpoints

r,address;nB Moves breakpoint n to new address, overriding previous address.

Report of Breakpoint Occurrence

nB:r,address Reports address at which breakpoint n suspended task execution.

Displaying Breakpoint Position

$nB   Displays current absolute address (or inactive state) of
             breakpoint n. Entering a replacement value alters the cur-
             rent contents of the breakpoint register.

CONTROL OF TASK EXECUTION

Go Command

G   Initiates task at entry address.

r,address G Initiates task at specified address (address must be even).
             Execution continues to a breakpoint or to completion.

Proceed Command

P   Resumes task execution from current breakpoint suspen-
             sion, and continues to a breakpoint or completion.

nP   Resumes task execution from current breakpoint suspen-
             sion, and does not recognize this breakpoint again until its
             nth occurrence.

$nC   Displays current contents of the proceed-count register
             associated with breakpoint n. New value typed before ter-
             minator replaces current contents.

Single-Instruction Command

S   Executes PC-addressed instruction, suspends task, and
             prints address of next instruction.

nS   Executes next n instructions, suspends task, and prints ad-
             dress of next instruction.

8B:r,address Specifies the next instruction's address.

FILL MEMORY BLOCK · F COMMAND

The memory-limit registers, low ($L) and high ($H), must contain the address boundaries of the affected memory area. Both contain 0 initially.

The following sequence establishes the address reference, which can be in relative or absolute form:

$L (or $H)/contents new-address terminator

value F   Places a value in search argument register ($A) and/or enters the current contents of ($A) in all memory locations from low limit ($L) through high limit ($H) in the same mode as the last-opened location.

LIST MEMORY BLOCK · L COMMAND

L   Prints memory locations within specified address limits on console listing device (CL:).

kL   Uses address value k as ending location and initiates listing operation.

a;L   Uses address value a as a beginning location and initiates listing operation.

a;kL   Uses address values a and k as beginning and ending addresses and initiates listing operation.

n;a;kL   All listing control arguments are specified in a single listing command; n is the LUN register containing the address of the listing device.

CALCULATING OFFSETS · O COMMAND

Calculates positive or negative (2's complement) PC-relative and branch offsets between even (word) addresses.

From Open Location

address/contents/addressO pc-rel > branch

Example: 16126/001402/16134O 000004 > 000002

Between Two Specified Addresses

address;addressO pc-rel > branch

Example: 16126;16134O 000004 > 000002

33

GENERAL PURPOSE REGISTERS

C Constant Register

Contains user-specified 16-bit value (unsigned, absolute) for reference as "C" in any address or new-value expressions. $C/ prints current contents. New value typed before [RET] replaces contents.

Q Quantity Register

Always contains the last value printed for reference as "Q" in address or new value expressions.

PROCESSOR STATUS WORD

$S/

Displays the task Processor Status Word (PSW). The new value typed before the terminator replaces the old PSW contents.

DIRECTIVE STATUS WORD

$W/

Displays a task's directive status word ($DSW). The new value typed before the terminator replaces the old contents.

MISCELLANEOUS SYMBOLS AND OPERATORS

+ or space   Sums contiguous arguments.

-            Subtracts the following argument from the preceding one.

.   Equals address of the last explicitly opened location.

=   Calculates the 16-bit value (positive or 2's complement) of the preceding argument string, prints it as 6 octal digits, and stores it in Q. Arguments can be signed or unsigned octal values, or relocatable address expressions, or any valid ODT expression.

TERMINATING ODT SESSION

X   Terminates ODT and returns control to the system monitor.

For additional information, refer to the *IAS/RSX-11 ODT Reference Manual.*

ERROR LOGGING

The error logging subsystem formats and generates reports on hardware reliability and the system configuration for an RSX-11M system. Error logging must be generated into the system before the user can invoke any of the error logging tasks (ERRLOG, PSE, SYE, or ERF). After error logging is activated, its operation is transparent to the system user until the reports it generates are needed.

In this section, red type indicates user input.

To activate error logging, enter the following commands from a privileged terminal:

    > INS $ERL

    > RUN ERRLOG

To install and run the preformatter task (PSE), enter the following command from a privileged terminal:

    INS $PSE

Then enter the following commands from any terminal:

    > PSE
    PSE > (RET)

The defaults are:

    SY:[1,6]ERROR.SYS = SY:[1,6]ERROR.TMP;*

or

    PSE > outdev:[UFD]filename.filetype = inputfile
        (assumes input file is [1,6] ERROR.TMP;*)
    PSE > (CTRL/Z)

Note that PSE cannot be run with the RUN $PSE command format.

To install and run SYE, type the following command from any terminal:

    > RUN $SYE
    SYE > outdev:[UFD]filnam.type = indev:[UFD]filnam.type/options

The defaults are:

    SY:[user UIC] ERRLOG.LST = SY:[1,6] ERROR.SYS/-RP

Report options allow the user to select additional error reports to supplement the summary reports (SYE always produces summary error reports) and to specify a time frame for the report.

Report Option
Switch | **Description**

/RP[:class]

Requests individual error reports; the class parameter is used to specify a general classification of errors to be reported. If no class parameter is specified with the RP switch, SYE reports on all classes.

Class has one of the following values:

null

    All classes.

SYS[:type]

    All system entries (including error logging start up and PSE entries), which are significant to DIGITAL service groups, such as Field Service or Software Support.

    Type is one of the following:

    NULL All types of system entries
    PSE   Entries from PSE operation
    STA   Error logging start up
    MOU Device mounts and dismounts
    TIM   System time changes
    MSG System Service Message

HDW[:type]

    All hardware errors. When class is HDW, an additional parameter can be specified, further defining the errors to be reported. This parameter takes the form:

    /RP:HDW[:type]

    Type is one of the following:

    NULL All types of hardware errors
    DSK   All disk errors
    MAG   All magnetic tape and DECtape errors
    MEM   All cache and main memory parity errors

TMO/[:type]

    Interrupt timeout errors from disks and tapes.

    Type is one of the following:

    DSK   Disk information only
    MAG   Magnetic tape information only

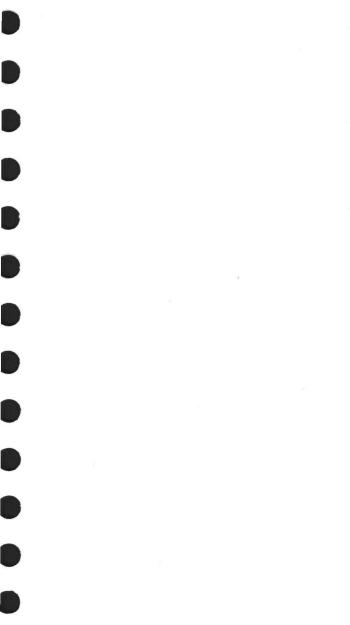| Report Option Switch	Description
/SU	Creates summary report
/QU	Creates short (quick) summary report
/-RP or /NORP	Does not include individual error reports. SYE produces a summary report only. /-RP is the default.
/DV:dev[n]	Includes in the report only those errors that occurred on a specified device type or on a specified device unit.
/BEG:time-and-date	Includes in the report only errors logged after the specified time and date. The format of the time-and-date parameter is: dd-mon-yr:hr:mi:se All the numbers are decimal and leading zeros are not required. Null equals zero. The field terminator (:) must be entered for a null field. The hours (hr) field is based on a 24-hour clock.
/END:time-and-date	Includes in the report only errors logged prior to the specified time and date. The format of the time and date parameter is: dd-mon-yr:hr:mi:se All the numbers are decimal and leading zeros are not required. Null equals zero. The field terminator (:) must be entered for a null field. The hours (hr) field is based on a 24-hour clock.
/HELP	Causes SYE to display SYE operating instructions. To obtain this information, the user specifies /HELP in response to the SYE prompt as follows: SYE > /HELP (RET)
/SP	Spools the output file. This is the default SYE operation.

To terminate Error Logging, run the Error Log Finish (ERF) task by entering the following command from a privileged terminal:

>INS $ERF (RET)
>ERF (RET)

For additional information, refer to the *RSX-11M/M-PLUS Error Logging Reference Manual.*

I/O ERROR CODES

The table below lists RSX-11M I/O error codes. Partial abbreviations are listed; the complete abbreviation is IE.xxx. The octal number listed is the low-order byte of the complete word value (2's complement of the decimal number).

Abbreviation	Error Decimal	Number Octal	Meaning
.BAD	- 1	377	Bad parameters
.IFC	- 2	376	Invalid function code
.DNR	- 3	375	Device not ready
.VER	- 4	374	Parity error on device
.ONP	- 5	373	Hardware option not present
.SPC	- 6	372	Illegal user buffer
.DNA	- 7	371	Device not attached
.DAA	- 8	370	Device already attached
.DUN	- 9	367	Device not attachable
.EOF	-10	366	End-of-file detected
.EOV	-11	365	End-of-volume detected
.WLK	-12	364	Write attempted to locked unit
.DAO	-13	363	Data overrun
.SRE	-14	362	Send/receive failure
.ABO	-15	361	Request terminated
.PRI	-16	360	Privilege violation
.RSU	-17	357	Shareable resource in use
.OVR	-18	356	Illegal overlay request
.BYT	-19	355	Odd byte count (or virtual address)
.BLK	-20	354	Logical Block Number too large
.MOD	-21	353	Invalid UDC module number
.CON	-22	352	UDC connect error
.NOD	-23	351	System dynamic memory
.DFU	-24	350	Device full
.IFU	-25	347	Index file full
.NSF	-26	346	No such file
.LCK	-27	345	Locked from read/write access
.HFU	-28	344	File header full
.WAC	-29	343	Accessed for write
.CKS	-30	342	File header checksum failure
.WAT	-31	341	Attribute control list format error
.RER	-32	340	File processor device read error

Abbreviation	Error Decimal	Number Octal	Meaning
.WER	-33	337	File processor device write error
.ALN	-34	336	File already accessed on LUN
.SNC	-35	335	File ID, file number check
.SOC	-36	334	File ID, sequence number check
.NLN	-37	333	No file accessed on LUN
.CLO	-38	332	File was not properly closed
.NBF	-39	331	No buffer space available for file
.RBG	-40	330	Illegal record size
.NBK	-41	327	File exceeds space allocated, no blocks
.ILL	-42	326	Illegal operation on file descriptor block
.BTP	-43	325	Bad record type
.RAC	-44	324	Illegal record access bits set
.RAT	-45	323	Illegal record attribute bits set
.RCN	-46	322	Illegal record number—too large
.ICE	-47	321	Internal consistency error
.2DV	-48	320	Rename—2 different devices
.FEX	-49	317	Rename—a new file name already in use
.BDR	-50	316	Bad directory file
.RNM	-51	315	Cannot rename old file system
.BDI	-52	314	Bad directory syntax
.FOP	-53	313	File already open
.BNM	-54	312	Bad file name
.BDV	-55	311	Bad device name
.BBE	-56	310	Bad block on device
.DUP	-57	307	Enter—duplicate entry in directory
.STK	-58	306	Not enough stack space (FCS or FCP)
.FHE	-59	305	Fatal hardware error on device
.NFI	-60	304	File ID was not specified
.ISQ	-61	303	Illegal sequential operation
.EOT	-62	302	End-of-tape detected
.BVR	-63	301	Bad version number
.BHD	-64	300	Bad file header
.OFL	-65	277	Device offline
.BCC	-66	276	Block check, CRC, or framing error
.ONL	-67	275	Device online
.NNN	-68	274	No such node
.NFW	-69	273	Path lost to partner
.BLB	-70	272	Bad logical buffer
.TMM	-71	271	Too many outstanding messages
.NDR	-72	270	No dynamic space available

Abbreviation	Error Decimal	Number Octal	Meaning
.BTF	-76	264	Bad tape format
.NNC	-77	263	Not ANSI "D" format byte count
.NNL	-78	262	Not a network LUN
.NLK	-79	261	Task not linked to specified ICS/ICR interrupts
.NST	-80	260	Specified task not installed
.AST	-80	260	No AST specified in connect
.FLN	-81	257	Device offline when offline request was issued
.IES	-82	256	Invalid escape sequence
.PES	-83	255	Partial escape sequence
.ALC	-84	254	Allocation failure
.ULK	-85	253	Unlock error
.WCK	-86	252	Write check failure

For additional information, refer to the *IAS/RSX-11 I/O Operations Reference Manual.*

DIRECTIVE ERROR CODES

Directives in the directive status word ($DSW) return the following error codes. The complete abbreviation for these codes is IE.xxx. Only partial abbreviations (xxx) are included on this list. The octal error number listed is the low-order byte of the complete word value (2's complement of the decimal).

Abbreviation	Error Decimal	Number Octal	Meaning
.UPN	- 1	377	Insufficient dynamic storage
.INS	- 2	376	Specified task not installed
.PTS	- 3	375	Partition too small for task
.UNS	- 4	374	Insufficient dynamic storage for send
.ULN	- 5	373	Unassigned LUN
.HWR	- 6	372	Device driver not resident
.ACT	- 7	371	Task not active
.ITS	- 8	370	Directive inconsistent with task state
.FIX	- 9	367	Task already fixed/unfixed
.CKP	-10	366	Issuing task not checkpointable
.TCH	-11	365	Task is checkpointable
	-12		(reserved)
	. . .		. . .
	-14		(reserved)
.RBS	-15	361	Receive buffer is too small
.PRI	-16	320	Privilege violation
.RSU	-17	357	Resource in use
.NSW	-18	356	No swap space available
.ILV	-19	355	Illegal vector specified
	. . .		. . .
	-79		(reserved)
.AST	-80	260	Directive issued/not issued from AST
.MAP	-81	257	Illegal mapping specified
	-82	256	(reserved)
.IOP	-83	255	Window has I/O in progress
.ALG	-84	254	Alignment error
.WOV	-85	253	Address window allocation overflow
.NVR	-86	252	Invalid region ID
.NVW	-87	251	Invalid address window ID
.ITP	-88	250	Invalid TI parameter
.IBS	-89	247	Invalid send buffer size (greater than 255)
.LNL	-90	246	LUN locked in use
.IUI	-91	245	Invalid UIC

DIRECTIVE ERROR CODES

Abbreviation	Error Decimal	Number Octal	Meaning
.IDU	-92	244	Invalid device or unit
.ITI	-93	243	Invalid time parameters
.PNS	-94	242	Partition/region not in system
.IPR	-95	241	Invalid priority (greater than 250)
.ILU	-96	240	Invalid LUN
.IEF	-97	237	Invalid event flag (greater than 64)
.ADP	-98	236	Part of DPB out of user's space
.SDP	-99	235	DIC or DPB size invalid

For additional information, refer to the *RSX-11M/M-PLUS Executive Reference Manual.*

TASK BUILDER (TKB) SWITCHES AND OPTIONS

In this section, red type indicates user input.

The format for Task Builder commands is:

```
> TKB
TKB > taskimagefile,memallocfile,symdeffile = inputfile(s)
```

For example, to task build a program called Zebra, type:

```
> TKB
TKB > ZEBRA.TSK,ZEBRA.MAP,ZEBRA.STB = ZEBRA.OBJ. . . .
TKB > /
ENTER OPTIONS:
TKB > optionname = argument(s)
. . .
TKB > // (to end Task Builder operation)
or
TKB > / (if you have another task to build)
```

The Task Builder file specification is:

```
filespec = dev:[g,m]filename.typ; version/switch(es)
defaults = SY: [uic]filename.typ;n/switch
```

The Task Builder uses the following default file types for the files named:

Task Image File	.TSK
Memory Allocation File	.MAP
Symbol Definition File	.STB
Object Module	.OBJ
Overlay Description	.ODL
Indirect Command	.CMD
Object Module Library	.OLB

In the file specification above, n is the latest version number for an input file and the latest version plus 1 for an output file.

Switches

The following key is used in the description below to designate which input and output files can use the Task Builder switch specified.

[T]	Task Image	(.TSK)
[M]	Task Builder Map	(.MAP)
[S]	Symbol Definition	(.STB)
[I]	Input	(.OBJ, .OLB, .ODL, .CMD)

The default value for switches is negative (-sw) unless otherwise specified.

/AC:n

Specifies that the task is an Ancillary Control Processor (ACP); n specifies the base relocation register (allowable registers are 0, 4, or 5; default register is 5). Overrides /PR if applied to the same file. [T]

/AL

Makes the task image file checkpointable and allocates checkpoint space in the checkpoint file. (Do not use with /CP in the same command line.) [T]

/CC

Specifies that the input file contains more than one object module. /-CC task builds only the first object module. The LB (library) switch overrides /CC if it is applied to the same file. (Default is /CC.) [T]

/CM

Specifies a compatability mode resident overlay structure. (Overlay segments are aligned on 256-word physical boundaries.) [T]

/CP

Makes the task image checkpointable and allows the task to be checkpointed to system checkpoint space. (Do not use in the same command line with /AL.) [T]

/CR

Appends a global cross-reference listing to the memory-allocation file. [M]

/DA

Includes a debugging aid in the task image (ODT) for a task-image (output) file or a user-supplied debugging program (for an input file). [T, I]

TASK BUILDER (TKB) SWITCHES AND OPTIONS

/DL

Specifies a default library file for global references that remain undefined after user-specified library files have been searched. (Can be applied to only one input file per task.) [I]

/EA

Specifies that the task uses the extended arithmetic element. (/FP overrides /EA if applied to the same file.) [T]

/FP

Specifies that the task used the floating-point processor. (Overrides /EA if applied to the same file.) [T]

/FU

Specifies a full search of all co-tree segments for a matching definition or reference when processing modules from the default object module library. [T]

/HD

Includes a header in the task image. (Default is /HD; /-HD is used with common blocks, resident libraries, loadable drivers, and system images.) [T,S]

/LB

Without arguments: TKB uses the input file as a library of relocatable object modules and searches to resolve undefined global references. Includes in task image any modules found in the library that resolve the undefined references. [I]

With arguments: [/LB:mod-1:mod-2 . . . . .] TKB inserts only the modules named in the command into the task image. [I]

/MA

Includes information from the input file in the memory allocation listing (when applied to an input file) or controls the display of information about the default library and shared regions (when applied to a memory allocation file). (Default is /MA for input file or /-MA for a memory allocation file.) [M, I]

/MM

Specifies that the system has memory management hardware. (Defaults to /MM if host system has memory management, or to /-MM if it does not.) [T]

47

/MP

Specifies that the input file describes the task's overlay (tree) structure. [I]

/PI

Specifies that only position-independent code or data is in the shareable global area. [T, S]

/PM

Produces a Postmortem Dump if the task is terminated with an SST abort. [T]

/PR:n

Specifies that the task has privileged access. /AC overrides /PR:n if applied to the same file; n specifies base relocation register (0, 4, or 5: default is 5). [T]

/RO

Enables recognition of the memory-resident overlay operator (!) in the overlay descriptor file (/MP). (Default is /RO.) [T]

/SE

Specifies that the task can receive messages by means of the Executive SEND directive. (Default is /SE.) [T]

/SH

Produces a short form of the memory-allocation file without the file contents section. [M]

/SL

Specifies that the task is slaved to an initiating task. Slave task runs under the UIC and TI: of the sending task. (Applies only to systems with multiuser protection.) [T]

/SP

Lists the memory-allocation file on the printer via the spooler. (Default is /SP.) [M]

/SQ

Builds program sections in the task image in the order in which they are named, rather than in alphabetical order. (Cannot be used with FORTRAN I/O handling modules or FCS modules from SYSLIB.) [T]

/SS

Extracts a global symbol definition from the input file if the global symbol table has a matching undefined reference. [I]

/TR

Specifies that the task can be traced. [T]

/WI

Lists the memory-allocation file in 132-column (wide) format. (Default is /WI.) [M]

/XT:n

Terminates the building of the task after n error diagnostics are detected; n can be octal or decimal (decimal must be specified with a decimal point, for example, 8.).

Options

[H]

Option is of interest to high-level language programmers.

[M]

Option is of interest to MACRO-11 programmers.

[H,M]

Option is of interest to both high-level language and MACRO programmers.

Names used for option input can be 6 characters long, from the Radix-50 character set (A-Z, 0-9, and $).

ABORT = n

Terminates the current task-build operation and restarts the Task Builder for another. (The n satisfies the option syntax; it means nothing.) [H, M]

ABSPAT = segname:address:value1...:value8

Patches the task image from its absolute address through 8 words. [M]

ACTFIL = filemax (decimal integer)

Specifies the number of files that a task can have open simultaneously (the default is 4). [H]

ASG = devicename:un1...:un8

Assigns logical unit number(s) in decimal to specified physical device(s). [H, M]

COMMON = name:access-code[:apr]

Declares that the task will access a system-owned resident common area. [H,M]

CMPRT = name

Identifies the completion routine in a supervisor-mode library. [M]

EXTSCT = psectname:extension

If the program section has the concatenated attribute, this option extends the size of the named program section by the number of octal bytes specified in the extension. If the program section has the overlay attribute, it is extended only if the extension value exceeds the length of the section. [H, M]

EXTTSK = n

Extends the task memory allocation by the length n (in decimal words) when it is installed in a system-controlled partition. The extension is rounded to the closest 32-word boundary. The default is the extension to the total task size as specified by the PAR option length parameter. [H, M]

FMTBUF = max-format (decimal integer)

Specifies the number of characters (in decimal bytes) in the longest format specification to be compiled at run time. The default is 132. [M]

GBLDEF = symbol-name:symbol-value

Defines the named global symbol as having a value in the range of 0 through 177777 (octal). [M]

GBLPAT = segname:symname[+ /-offset]:val1...:val8

Patches the task image from the location addressed by the global symbol plus or minus the octal offset value through 8 words. All values are octal. [M]

GBLREF = symbol-name:symbol-value

Declares the named symbol as a global symbol reference originating in the root segment of the task. [H, M]

GBLXCL = symbolname:symbolname:...:symbolname

Specifies the symbols that are to be excluded from the symbol definition file of a resident supervisor-mode library. [H, M]

LIBR = name:access-code[:apr]

Declares that the task will access a system-owned resident library. [H, M]

MAXBUF = max-record

Specifies the maximum allowable record buffer size (in decimal bytes) in any file processed by the task. [H]

ODTV = symbol-name:vector-length

Declares the named global symbol to be the address of the ODT synchronous system trap vector (SST). The global symbol must be defined in the main root segment. [M]

PAR = name[:base:length]

Identifies the partition for which the task is built. For a mapped system, a size of 0 implies a system-controlled partition, and a nonzero size implies a user-controlled partition. Base and length do not have to be expressed if the partition resides on the host system. The default is PAR = GEN. [H, M]

PRI = priority

Sets the priority at which the task executes; can be overridden when the task is installed. The priority is a decimal integer between 1 and 250. [H, M]

RESCOM = filespec/access-code[:apr]

Declares that the task will access a user-owned resident common. [H, M]

RESLIB = filespec/access-code[:apr]

Declares that the task will access a user-owned resident library. [**H, M**]

RESSUP = filespec/[·]SV[:apr]

Specifies that the task will access a resident supervisor-mode library. [**H, M**]

ROPAR = parname

Specifies the partition in which the read-only portion of a multiuser task resides. [**H, M**]

STACK = stack-size

Establishes the maximum size of the stack available to the task. The default is 256 bytes. [**H, M**]

SUPLIB = name:[·]SV[:apr]

Specifies that the task will access a system-owned resident supervisor-mode library. [**H, M**]

TASK = taskname

Names the task. [**H, M**]

TSKV = symbol-name:vector-length

Declares a global symbol to be the address of the task synchronous system trap vector (SST). [**M**]

UIC = [g,m]

Declares the UIC for time-based initiation of a task. The default is the UIC under which the Task Builder is running. [**H, M**]

UNITS = max-units

Declares the number of logical units used by the task (a decimal number in the range of 0 through 250). The default is 6. [**H, M**]

VSECT = psectname:base:window[:physical-length]

Specifies the virtual base address, length of virtual memory address space (window), and length of physical memory allocated to the named program section. [**H, M**]

WNDWS = n

Declares the number (0 through 7) of extra address windows required by the task. The number specified equals the number of simultaneously mapped regions the task will use. [H, M]

ASCII CHARACTER SET

Octal Code	Character	Octal Code	Character	Octal Code	Character	Octal Code	Character
000	NUL	040	SP	100	@	140	
001	SOH	041	!	101	A	141	a
002	STX	042	"	102	B	142	b
003	ETX	043	#	103	C	143	c
004	EOT	044	$	104	D	144	d
005	ENQ	045	%	105	E	145	e
006	ACK	046	&	106	F	146	f
007	BEL	047	'	107	G	147	g
010	BS	050	(	110	H	150	h
011	HT	051	)	111	I	151	i
012	LF	052	*	112	J	152	j
013	VT	053	+	113	K	153	k
014	FF	054	,	114	L	154	l
015	CR	055	-	115	M	155	m
016	SO	056	.	116	N	156	n
017	SI	057	/	117	O	157	o
020	DLE	060	0	120	P	160	p
021	DC1	061	1	121	Q	161	q
022	DC2	062	2	122	R	162	r
023	DC3	063	3	123	S	163	s
024	DC4	064	4	124	T	164	t
025	NAK	065	5	125	U	165	u
026	SYN	066	6	126	V	166	v
027	ETB	067	7	127	W	167	w
030	CAN	070	8	130	X	170	x
031	EM	071	9	131	Y	171	y
032	SUB	072	:	132	Z	172	z
033	ESC	073	;	133	[	173	{
034	FS	074	<	134	\	174		
035	GS	075	=	135	]	175	}
036	RS	076	>	136	∧	176	~
037	US	077	?	137	—	177	DEL

*Equivalent to the Radix-50 character set.

RADIX-50 CONVERSION TABLE

To convert one to three characters to their Radix-50, 6-digit octal equivalent, add the appropriate octal codes from the following table, based on the positions of the characters in the string (that is, first, second, or third).

Character Set	First Character Code	Second Character Code	Third Character Code
Space	000000	000000	000000
A	003100	000050	000001
B	006200	000120	000002
C	011300	000170	000003
D	014400	000240	000004
E	017500	000310	000005
F	022600	000360	000006
G	025700	000430	000007
H	031000	000500	000010
I	034100	000550	000011
J	037200	000620	000012
K	042300	000670	000013
L	045400	000740	000014
M	050500	001010	000015
N	053600	001060	000016
O	056700	001130	000017
P	062000	001200	000020
Q	065100	001250	000021
R	070200	001320	000022
S	073300	001370	000023
T	076400	001440	000024
U	101500	001510	000025
V	104600	001560	000026
W	107700	001630	000027
X	113000	001700	000030
Y	116100	001750	000031
Z	121200	002020	000032
$	124300	002070	000033
.	127400	002140	000034
Unused	132500	002210	000035
0	135600	002260	000036
1	140700	002330	000037
2	144000	002400	000040

RADIX-50 CONVERSION TABLE

Character Set	First Character Code	Second Character Code	Third Character Code
3	147100	002450	000041
4	152200	002520	000042
5	155300	002570	000043
6	160400	002640	000044
7	163500	002710	000045
8	166600	002760	000046
9	171700	003030	000047

OCTAL/DECIMAL CONVERSION TABLE

Bits	Octal	Decimal
15	100000	32768
	0	0
	70000	28672
	60000	24576
14	50000	20480
13	40000	16384
12	30000	12288
	20000	8192
	10000	4096
	0	0
	7000	3584
	6000	3072
11	5000	2560
10	4000	2048
9	3000	1536
	2000	1024
	1000	512
	0	0
	700	448
	600	384
8	500	328
7	400	256
6	300	192
	200	128
	100	64
	0	0
	70	56
	60	48
5	50	40
4	40	32
3	30	24
	20	16
	10	8
	0	0
	7	7
	6	6
2	5	5
1	4	4
0	3	3
	2	2
	1	1
	0	0

Octal to Decimal

For each position of the octal value, locate the octal digit and its decimal equivalent in the conversion table. Add the decimal equivalents to obtain the decimal value.

Example:
$$53702(8) = ?(10)$$

n(8)		n(10)
50000	=	20480
3000	=	1536
700	=	488
00	=	00
2	=	2
$53702(8)$	=	$22466(10)$

Decimal to Octal

Locate in the conversion table the decimal value closest to, but not exceeding, the decimal value to be converted. Record the octal equivalent. Subtract the table decimal value from the decimal value to be converted. Repeat the process until the subtraction balance equals 0. Add the octal equivalents to obtain the octal value.

Example: $22466(10) =$ $?(8)$
                   $n(10) =$ $n(8)$

				22466
20480	=	50000		− 20480
				1986
1536	=	3000		− 1536
				450
448	=	700		− 448
				2
2	=	2		− 2
$22466(10) =$		$53702(8) =$		0

STANDARD FILE TYPES

RSX-11M uses the standard 3-letter file types used by all DIGITAL-supplied software. These names indicate the actual contents of the files. Although any combination of three letters can be used, DIGITAL recommends that the standard types be used whenever possible. (Compilers and other system programs that refer to these file types look for the standard name as a default. For example, if the command FOR ADD = ADD is issued, the FORTRAN-IV compiler looks for ADD.FTN and if the file is named ADD.FOR, the compiler reports that there is no such file.)

Type	File Contents
.BAS	A BASIC-11 language source program
.B2S	A BASIC-PLUS-II language source program
.CBL	A COBOL language source program
.CMD	MCR or task commands (an indirect command file)
.COR	A SLP correction file
.DAT	Data (as opposed to a program)
.DIR	A directory (for example, a User File Directory)
.DOC	A RUNOFF output file
.F4P	A FORTRAN-IV PLUS language source program
.FTN	A FORTRAN-IV language source program
.LST	A listing file
.MAC	A MACRO-11 source program
.MAP	A Task Builder memory allocation map
.MLB	A macro library
.MSG	A FORTRAN run-time error message file
.OBJ	An object program (output from either the MACRO-11 Assembler or a compiler)
.ODL	A Task Builder overlay descriptor
.OLB	An object module library
.RNO	A RUNOFF input file
.SML	The system macro library
.SYS	A bootable system image
.TMP	A temporary file
.TSK	A task image file
.TXT	A text file
.ULB	A universal file library